



# **BORDER 2012: U.S.-MEXICO BORDER SCRAP TIRE INVENTORY SUMMARY REPORT**

**May 2007**

**EPA530-R-07-005**



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
WASHINGTON, D.C. 20460

OFFICE OF  
SOLID WASTE AND EMERGENCY  
RESPONSE

**Subject: Completion of U.S.-Mexico Border Scrap Tire Pile Inventory**

Dear U.S.-Mexico Border Colleagues, Partners, and Stakeholders:

I am pleased to announce the release of the "Border 2012: U.S. Mexico Border Scrap Tire Inventory Summary Report." This is the first inventory to be completed of scrap tire piles for the *entire* U.S.-Mexico border region. The scrap tire inventory features a geographic information system (GIS) map of the scrap tire piles in the border region. The inventory supports two objectives under the Land Contamination Goal of the U.S.-Mexico Border 2012 Program: building infrastructure and institutional capacity, and cleaning-up tire piles along the U.S.-Mexico border.

The U.S. Environmental Protection Agency's (EPA) Office of Solid Waste, working closely with the Ministry of Environment and Natural Resources (SEMARNAT), places a high priority on providing long-term solutions to address scrap tire piles. The U.S.-Mexico scrap tire pile inventory has been created in order to provide the location of scrap tire piles along the border. The summary report and map will be used in the decision making process for preventing scrap tire piles. The GIS map of the scrap tire piles can be found in the attached CD-ROM.

Thanks to the culmination of efforts by Border States, municipalities, academia, and the two federal governments, this invaluable scrap tire pile inventory has been completed. I am excited to share it with you and I look forward to cooperating on future work to prevent the creation of scrap tire piles in the border region.

Sincerely,

A handwritten signature in blue ink, which appears to read "Matthew Hale", is positioned below the word "Sincerely,".

Matthew Hale  
Director, Office of Solid Waste



**BORDER 2012:  
U.S.–MEXICO BORDER SCRAP TIRE INVENTORY  
SUMMARY REPORT**

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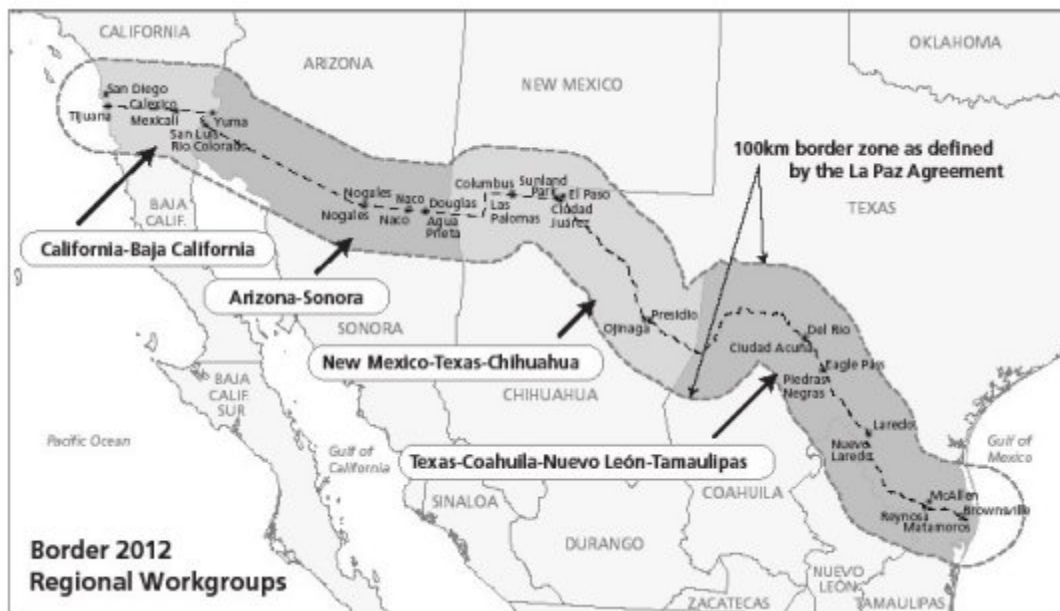
## 1.0 INTRODUCTION

Throughout the U.S.–Mexico border region, a significant number of scrap tire piles exist containing millions of scrap tires. It is believed that the tire piles result mainly from a robust market for partially used tires in the border region. Less expensive than new tires, these partially used tires have a short life, thereby contributing to the large accumulation of scrap tires in the U.S.-Mexico border region.

Scrap tire piles pose significant environmental and health risks. Ideal breeding grounds for mosquitoes, rodents, and other vectors of disease, scrap tire piles increase risks of malaria, dengue fever, West Nile Virus, and encephalitis. Further, tire piles, if they were to catch fire, are difficult to extinguish and can burn for months, emitting noxious fumes and generating liquid wastes that contaminate soil, groundwater and surface water. The health risks along the U.S.–Mexico border region are especially of concern because of the close proximity of tire piles to communities.

To address this problem, the U.S. and Mexico are collaborating in implementing the Border 2012 Environmental Program. This binational program aims to protect public health and the environment in the U.S.–Mexico border region within 100-kilometer on each side of the international border (see Figure 1). A key goal of Border 2012 is for the two countries to reduce land contamination along their shared border, including tire piles.

**FIGURE 1**  
**U.S. – MEXICO BORDER**



As a step toward improving scrap tire pile management along the U.S.-Mexico border, the U.S. Environmental Protection Agency's (U.S. EPA) Office of Solid Waste initiated a project to compile existing data to create a comprehensive scrap tire pile site inventory (scrap tire pile sites include sites where tire piles exist or have recently been cleaned up). The primary objective was to compile existing data to create an inventory of all known tire pile sites on the Mexican side of the eastern border (along New Mexico and Texas). In 2002, U.S. EPA Region 9 prepared a tire pile inventory for the western border (along California and Arizona) for the United States and Mexico, which was updated in 2003 and 2004. After compiling data collected on the Mexican side of the eastern border, this and other available data were used to create one geographic information system (GIS) map of scrap tire pile sites for the border region. At this time, the tire pile site data included in this border scrap tire inventory may be incomplete for parts of New Mexico and Texas; however, in the future, U.S. EPA intends to include additional tire pile sites in New Mexico and Texas.

In order to complete this inventory, local experts were contacted to collect information on all known scrap tire pile sites in the 100-kilometer-wide region south of the U.S.–Mexico border in the Mexican states of Chihuahua, Coahuila, Nuevo León, and Tamaulipas (south of the U.S. states of New Mexico and Texas). The majority of tire piles are near border cities; therefore, data collection focused on the cities of Palomas, Ciudad Juárez, Ciudad Acuña, Ojinaga, Piedras Negras, Nuevo Laredo, Reynosa, and Matamoros. Existing tire pile site data in other U.S.–Mexico border cities were also collected and reviewed.

This report discusses the methods used to collect scrap tire pile information (Section 2.0), results based on the data collected (Section 3.0), and data gaps (Section 4.0). A list of references used in preparing this report is presented after Section 4.0. Appendix A of this report lists the individuals contacted, Appendix B provides a table summarizing tire pile sites identified on the Mexican side of the U.S.–Mexico Border, and Appendix C provides a large-scale map titled “U.S. – Mexico Border Scrap Tire Pile Site Inventory” that shows detailed locations for the tire pile sites along the entire U.S.–Mexico border.

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## 2.0 INFORMATION COLLECTION

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This section discusses the tasks performed to collect information on the scrap tire pile sites including contacting local experts, reviewing previous studies, and compiling the data.

### 2.1 CONTACT LOCAL EXPERTS

Three local scrap tire pile experts were identified as primary contacts. These sources provided scrap tire pile site information for the Mexican side of the border's eastern region:

Martin H. Bremer  
ITESM, Col. Tecnológico,  
Monterrey, N.L.  
Telephone: (81) 8228-4032  
[MBremer@itesm.mx](mailto:MBremer@itesm.mx)

Jorge Castillo  
Texas Commission on  
Environmental Quality (TCEQ)  
El Paso, Texas

Toni Duggan  
New Mexico Environment Department  
Albuquerque, New Mexico  
Telephone: (505) 827-0559  
[toni\\_duggan@nmenv.state.nm.us](mailto:toni_duggan@nmenv.state.nm.us)

As a first step, these experts were contacted to obtain scrap tire pile site information and contact information of additional local scrap tire pile experts and organizations (see Appendix A for full list of contacts). These sources were interviewed and some provided further site information. It should be noted that available information from Martin Bremer was obtained through Jorge Castillo, who spoke with Mr. Bremer directly regarding this project. Mr. Castillo is no longer with TCEQ; the general telephone number for TCEQ is (512) 239-1000.

For each scrap tire pile site identified, an attempt was made to collect data from the local experts regarding the following:

- Scrap tire pile site location (latitude/longitude coordinates or address, nearest intersection, or nearest landmark for geocoding)
- Size (number of tires or pile dimensions)
- Storage method (for example, bunched or baled versus loose tires)
- Site access control
- Site status (active or inactive)
- Authorized agency responsible for site
- Breakdown of passenger versus truck tires
- Site owner
- Whether pile site is considered legal or illegal

As Appendix B shows, more detailed site information was typically unavailable.

To facilitate data collection, a Microsoft Excel spreadsheet was created for local sources to input data. Mr. Castillo translated this spreadsheet into Spanish and distributed it to local Mexican contacts. Much of the information requested was not readily available, and data gaps are still present. Some sources provided different information on the same scrap tire pile sites, which resulted in conflicting information, especially for site size estimates. Conflicting estimates were reconciled by contacting individuals with the most updated information.

Available information from each source was compiled into one Microsoft Excel spreadsheet. Identified sites lacking geographic coordinates were assigned locations based on their proximity to the nearest city. Other data gaps, such as the number of scrap tires, were designated as “Not Available (NA)” in the spreadsheet.

## **2.2 REVIEW PREVIOUS STUDIES**

To gather information on scrap tire pile sites in other regions of the U.S.–Mexico border, tire pile inventory information from other scrap tire inventory projects were reviewed. Information on both the U.S. and Mexico sides of the border’s western portion were obtained through a U.S. EPA Region 9 report entitled “Aerial Photographic Inventory of Tire Piles, United States – Mexico Border: California and Arizona, USA – Baja California and Sonora, Mexico” (U.S. EPA Region 9 2002). U.S. EPA Region 9 was also contacted to determine if updated information was available. U.S. EPA Region 9 supplied three updated reports containing information on tire pile sites identified in the 2002 report as well as additional information (EPA 2003, 2004a, and 2004b). Applicable data from these reports were incorporated into the inventory.

Mr. Paul Hobart with the University of Texas was contacted to gather information being collected under the grant the university received for satellite imagery review for scrap tire pile sites. Mr. Hobart indicated that the ongoing project being conducted by the University of Texas was limited to the El Paso and Ciudad Juárez area and that the study involved collecting data on scrap tire pile site location and size. The University of Texas reviewed the satellite imagery using several different kinds of remote sensing software applications to identify potential scrap tire piles; however, as of December 2006, field verification of the potential sites had not been conducted and it was unclear if field verification would be



conducted as part of the investigation. Because the preliminary data from the ongoing University of Texas project had not been field verified, it was not included in this report.

Dr. Paul Ganster at San Diego State University and Ms. Catherine Huybrechts at Endpoint Environmental were also contacted regarding two projects being funded by the California Integrated Waste Management Board (CIWMB): (1) Tire Flow Study along the California–Mexico Border Region and (2) Mapping Tire Piles with Satellite Imagery. Under the tire flow study, a methodology is being developed to gather and report data on the number of used and scrap tires transported between California and Mexico from 2000 to the present. Further, data will also be collected on locations of existing tire pile sites. Estimates will be made regarding the number of tires sold, reused, and disposed of in the California–Mexico border region. The study also will include costs to transport tires, revenue from the sale of the tires, tire disposal costs, costs to remediate tire disposal sites, and costs resulting from possible fires at scrap tire piles. Furthermore, the study will evaluate the existing regulatory structure used by California and Mexico to manage scrap tires along the region, including current waste tire policies, laws, regulations, and procedures. In addition, the study will provide suggestions for consideration by policy-makers on tire-related issues. The project will also include ground-truthing of potential scrap tire pile sites identified under the mapping tire piles with satellite imagery project described below. The study summary descriptions, analyses, and suggestions will be published for wide distribution. Study completion is expected in 2007.

For the mapping tire piles with satellite imagery project, CIWMB is partnering with San Francisco State University and Endpoint Environmental under a project called “Remote Sensing of Waste Tires” to expand on and apply a proof-of-concept method for locating tire pile sites using satellite imagery. The proof-of-concept method was developed at National Aeronautics and Space Administration’s (NASA) Ames Research Center in 2005, and it can identify densely grouped tire piles of 100 or more tires in commercially available, high-resolution satellite imagery. The project will refine and apply the proof-of-concept method to map approximately 5,000 square miles of California and the California–Mexico border for tire pile sites. Initially, the project will focus on northern California and then on southern California and along the California–Mexico border. Review of satellite imagery began in December 2006. The project is estimated to be completed in 2007.

## **2.3      COMPILE DATA**

The available scrap tire pile site inventory information was compiled into a Microsoft Excel 2003 spreadsheet. This information was then imported into ArcMap 9.1 to create a GIS map of the tire pile sites in the entire border region. The map's geographic range is the 100-kilometer-wide area on each side of the border along the U.S. states of California, Arizona, New Mexico, and Texas, and the Mexican states of Baja California, Sonora, Chihuahua, Coahuila, Nuevo León, and Tamaulipas. Coordination was conducted regarding the appropriate GIS projection, additional GIS layers to be included on the map (such as waterways, highways, and roads), and other user preferences.

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### 3.0 RESULTS

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Based on the available information, a total of 42 scrap tire pile sites were identified in the 200-kilometer-wide area along the U.S.–Mexico border; however, as noted previously, data may be incomplete for parts of Texas and New Mexico. Figure 2 is a map showing the locations of the identified tire pile sites.

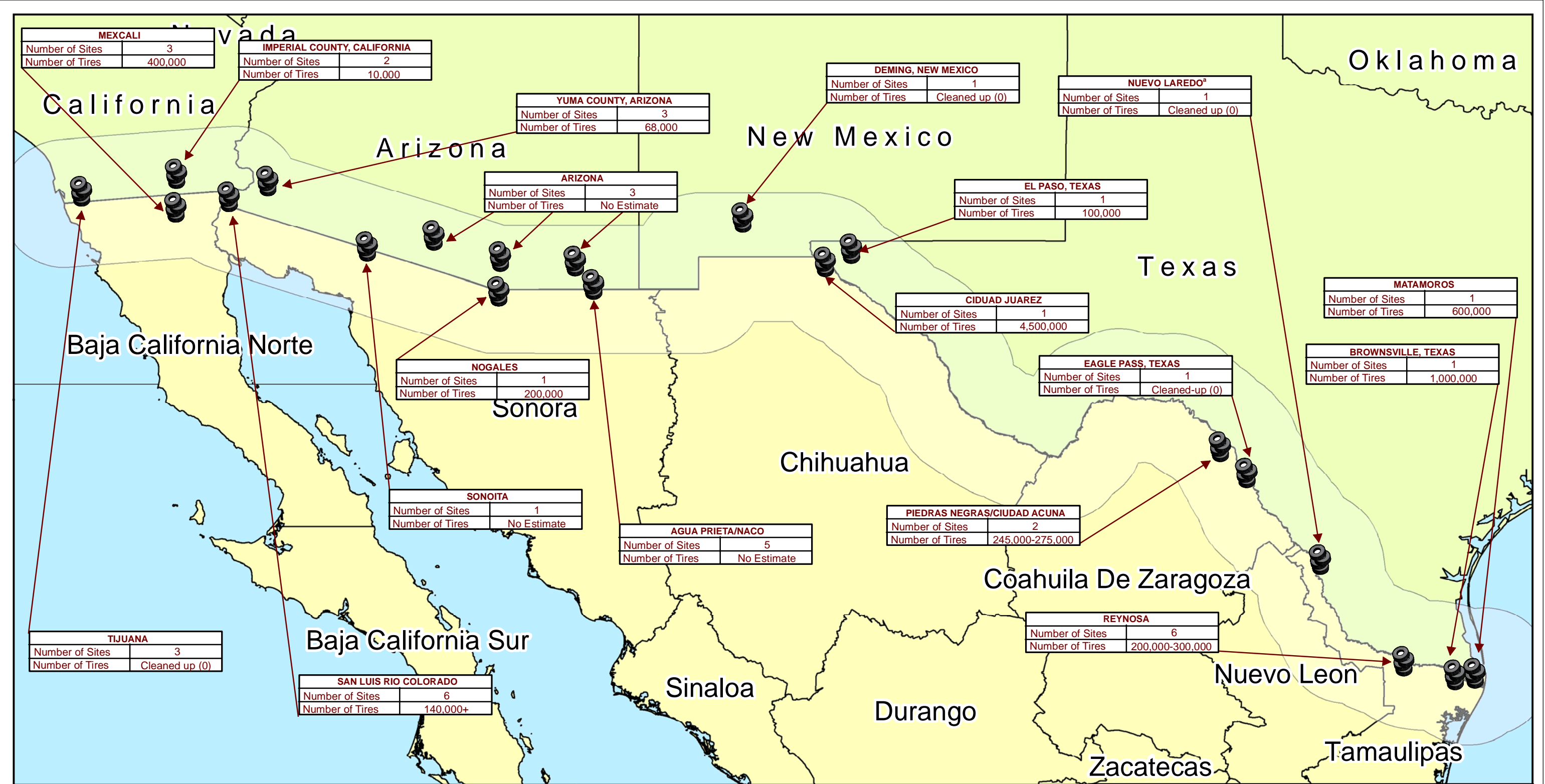
Appendix B provides a table summarizing the identified scrap tire pile sites on the U.S.–Mexico border’s Mexican side. A more detailed depiction of the identified tire pile sites is included in Appendix C, “U.S. – Mexico Border Scrap Tire Pile Site Inventory.” The sections below discuss scrap tire pile sites on the Mexican and U.S. sides of the U.S.–Mexico border and future scrap tire pile site management and cleanup.

#### 3.1 SCRAP TIRE PILE SITES ON MEXICAN SIDE OF U.S.–MEXICO BORDER

Along the Mexican side of the border, 30 scrap tire pile sites were identified as summarized in Table 1 below.

**TABLE 1**  
**SUMMARY OF SITES IN MEXICO ALONG U.S.–MEXICO BORDER**

<b>Mexican State</b>	<b>No. and Description of Sites Identified</b>	<b>Estimated No. of Tires</b>
Baja California	6 total sites; 5 sites cleaned up; 1 active site remains	400,000
Sonora	13 total sites; 1 site cleaned up; 2 active sites remain; information for 10 sites not available, including estimated number of tires	340,000
Chihuahua	One active site	4,500,000
Coahuila	Two active sites	245,000 to 275,000
Tamaulipas	Eight total sites; 1 site cleaned up; seven active sites remain	800,000 to 900,000



# LEGEND

- Mexico
- Study Area
- U.S.
- Tire Site Area

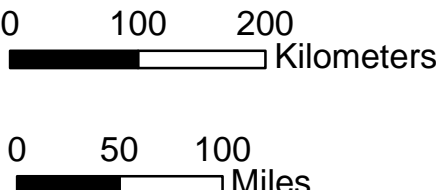


FIGURE 2  
SCRAP TIRE PILE SITE LOCATIONS  
ALONG U.S. - MEXICO BORDER



Notes:  
a The tires formerly stored in Nuevo Laredo were burned in a fire. No tires remain.

\*See Appendix C for more detailed information

### 3.2 SCRAP TIRE PILE SITES ON THE WESTERN PORTION OF THE U.S.–MEXICO BORDER

Along the U.S. side of the border, 12 scrap tire pile sites were identified, including 8 sites along the western portion of the border. One cleaned up site is in New Mexico, one cleaned up site and two active sites are in Texas, and the eight sites along the western portion of the border are identified in updated reports from U.S. EPA Region 9. Table 2 summarizes scrap tire pile sites along the western portion of the U.S. side of the U.S. – Mexico border only (California and Arizona).

**TABLE 2**  
**SUMMARY OF SITES IN U.S. – WESTERN PORTION OF BORDER**

U.S. State	No. of Piles Identified	Estimated No. of Tires
California	2	10,000
Arizona	6	68,000 <sup>a</sup>
TOTAL	8	78,000

Note:

a Tire quantity estimate exists for only one site in Arizona

Table 3 summarizes scrap tire pile sites along the western portion of the U.S. – Mexico border in both the U.S. and Mexico (California, Arizona, Baja California Norte, and Sonora).

**TABLE 3**  
**SUMMARY OF SITES IN BOTH MEXICO AND U.S. – WESTERN PORTION OF BORDER**

State	No. of Sites	Estimated No. of Tires
Baja California and Sonora	19 <sup>a</sup>	740,000
California and Arizona	8	78,000
TOTAL	27	818,000

Note:

a The number of sites includes six sites that have been cleaned up

### 3.3 FUTURE SCRAP TIRE PILE SITE MANAGEMENT AND CLEANUP

Information was obtained regarding plans for future scrap tire pile site management and cleanup. According to local experts, tires in San Luis Rio Colorado will be sent to Ensenada. Authorities in Reynosa are finishing annual tire generation estimation and are working to establish a local storage facility. In Nogales, the municipal government is stockpiling tires at a controlled site for municipal solid waste. Because of a complicated landscape, removal of these tires will be expensive and quantity



estimation is difficult due to the way tires are being collected. A pilot project is being funded to transport tires from Nogales to Hermosillo.

Information on the anticipated management schedule for several tire pile sites on the Mexican side of the border was gathered, including ongoing clean-up activities. Table 4 below summarizes this information.

**TABLE 4**  
**SCRAP TIRE PILE SITE MANAGEMENT SCHEDULE**

<b>Pile Location</b>	<b>Clean-up Goal</b>
El Centinela	Site has been cleaned up
Ciudad Juárez	Removal of 1,000,000 tires per year
San Luis Río Colorado	Removal of 80,000 to 100,000 tires per year
Nogales	Removal of 80,000 to 100,000 tires per year
Matamoros	Removal of 80,000 to 100,000 tires per year
Piedras Negras	Removal of 80,000 to 100,000 tires per year
Llanset	Site is an operated/managed facility, and it is not known if there are current clean-up plans

## 4.0 DATA GAPS

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Despite the significant environmental and health risks presented by scrap tire pile sites, related data in the 200-kilometer-wide strip along the U.S.–Mexico border are not readily available. Several scrap tire pile site locations were identified; however, data are geographically clustered and significant data gaps are present. These gaps include information required to effectively manage scrap tire pile sites and to determine their potential threat to the environment and human health.

Based on incomplete information, especially for the eastern portion of the border on both the U.S. and Mexican sides, and on the significant environmental and health risks presented by the piles, additional investigation of scrap tire pile sites along the U.S.–Mexico border would be useful. Tire pile sites can be identified over a broad range through satellite imagery review. U.S. EPA Region 9 used aerial photography review to locate tire pile sites along the western portion of the U.S.–Mexico border (U.S. EPA 2002). As part of the study, public databases were searched and scrap tire collection sites and processing facilities were identified, which were then located on the aerial photographs. Through additional review of aerial photographs, additional suspected sites were identified. Scrap tire pile sites can also be identified by interviewing local government agencies. Although these measures can provide ways to identify the sites, ground-truthing of suspected sites would be useful to confirm the existence of the piles and to gather more detailed information about the site status. Tires are continually added or removed from scrap tire pile sites; therefore, any scrap tire pile site inventory and associated maps are dynamic in nature.

## 5.0 REFERENCES

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- U.S. Environmental Protection Agency (U.S. EPA) Region 9. 2002. “Aerial Photographic Inventory of Tire Piles United States – Mexico Border. California and Arizona, USA – Baja California and Sonora, Mexico.” May.
- U.S. EPA Region 9. 2003. “U.S./Mexico Border Tire Pile Study for Fire Prevention and Mitigation. Revised Draft.” October.
- U.S. EPA Region 9. 2004a. “Preventing Waste Tire Pile Fires on the U.S./Mexico Border. Centinela Final Report, Innor Final Report, Llanset Final Report.” October 1.
- U.S. EPA Region 9. 2004b. “Draft Tire Pile Site List – Border Region – California/Baja California and Arizona/Sonora Sites.” October 1.

**APPENDIX A**  
**LOCAL EXPERTS CONTACTED**  
(One Page)

**APPENDIX A**  
**LOCAL EXPERTS CONTACTED**

<b>Name</b>	<b>Affiliation</b>	<b>Telephone No.</b>	<b>e-Mail Address</b>
Martin Bremer	ITESM, Col. Tecnológico	(81) 8228-4032	<a href="mailto:MBremer@itesm.mx">MBremer@itesm.mx</a>
Jorge Castillo <sup>a</sup>	Texas Commission on Environmental Quality (TCEQ)	Formerly (915) 834-4962	Formerly <a href="mailto:JoCastil@tceq.state.tx.us">JoCastil@tceq.state.tx.us</a>
Hector Chavez	City of Eagle Pass, Texas	(830) 773-9408	<a href="mailto:hchves@cityofealgepass.org">hchves@cityofealgepass.org</a>
Toni Duggan	New Mexico Environment Department	(505) 827-0559	<a href="mailto:toni.duggan@state.nm.us">toni.duggan@state.nm.us</a>
Paul Ganster	San Diego State University	(619) 594-5423	<a href="mailto:pganster@mail.sdsu.edu">pganster@mail.sdsu.edu</a>
Paul Hobart	University of Texas	(512) 383-1225	<a href="mailto:hobart.paul@gmail.com">hobart.paul@gmail.com</a>
Catherine Huybrechts	Endpoint Environmental	(415) 668-4222	<a href="mailto:catherine@endpointenvironmental.com">catherine@endpointenvironmental.com</a>
Denise Kennedy	DK Enterprises	(503) 283-2661	<a href="mailto:denise@dkebusinesses.com">denise@dkebusinesses.com</a>
Harry Mikel	New Mexico Environment Department	(505) 647-7952	<a href="mailto:harry.mikel@state.nm.us">harry.mikel@state.nm.us</a>
Larry Olsen	New Mexico State University	(505) 646-3526	<a href="mailto:lolsen@nmsu.edu">lolsen@nmsu.edu</a>
Adriana Oropeza <sup>b</sup>	SEMARNAT	Formerly (55) 5490-0968	Formerly <a href="mailto:Adriana.oropeza@semarnat.gob.mx">Adriana.oropeza@semarnat.gob.mx</a>
Emily Pimentel	U.S. EPA Region 9	(415) 972-3326	<a href="mailto:Pimentel.Emily@epamail.epa.gov">Pimentel.Emily@epamail.epa.gov</a>
Allyson Siwik	Border 2012, New Mexico-Chihuahua Rural Task Force	(505) 388-4350	<a href="mailto:asiwik@zianet.com">asiwik@zianet.com</a>
Robert Snowbarger	U.S. EPA Region 6	(214) 665-7131	<a href="mailto:Snowbarger.Robert@epamail.epa.gov">Snowbarger.Robert@epamail.epa.gov</a>
Lauren Volpini	U.S. EPA Region 9	(415) 744-2333	<a href="mailto:Volpini.Lauren@epamail.epa.gov">Volpini.Lauren@epamail.epa.gov</a>

Note:

<sup>a</sup> Jorge Castillo is no longer with TCEQ; the general telephone number is (512) 239-1000.

<sup>b</sup> Adriana Oropeza is no longer with SEMARNAT; the general telephone number is (55) 5628-0600.



**APPENDIX B**

**U.S.–MEXICO BORDER  
MEXICO SCRAP TIRE PILE SITE INVENTORY**

(One Page)

U.S. - MEXICO BORDER  
MEXICO SCRAP TIRE PILE SITE INVENTORY<sup>a</sup>

Site ID	Name/Description	Location	State	Number of Tires	Latitude	Longitude	Status	Comments/Recommendations	Source <sup>b</sup>
1	Probable waste disposal area	Tijuana	Baja California Norte	0	32.50454444	-116.8681889	Cleaned up	2 sub-sites associated with this site.	9
2	Six temporary waste disposal centers	Tijuana	Baja California Norte	0	NA	NA	Cleaned up	Consider site visit to determine whether any tires remain; monitor tires that occur over time.	9
3	La Gloria	Tijuana	Baja California Norte	0	NA	NA	Cleaned up	Consider site visit to assess site conditions in coordination with state Civil Protection.	9
4	Probable tire piles	San Luis Rio Colorado	Sonora	No Estimate	32.4103	-114.8381111	NA	Site information not available.	1
5	Possible maintenance facility/ possible tires	San Luis Rio Colorado	Sonora	No Estimate	32.46876667	-114.8138556	NA	Site information not available.	1
6	Probable junkyard/ salvage/ possible tires	San Luis Rio Colorado	Sonora	No Estimate	32.42779444	-114.8078583	NA	Site information not available.	1
7	Probable burned tire pile	San Luis Rio Colorado	Sonora	No Estimate	32.4314	-114.7766222	NA	Site information not available.	1
8	Burning probable tire pile	San Luis Rio Colorado	Sonora	No Estimate	32.41274444	-114.7815444	NA	Site information not available.	1
9	Possible truck maintenance site/ possible tires	Sonoita	Sonora	No Estimate	31.87889167	-112.8161694	NA	Consider site visit to assess site conditions in coordination with state Civil Protection.	1
10	Probable dump/ possible tires	Naco	Sonora	No Estimate	31.30621944	-109.9417889	NA	Consider site visit to assess site conditions in coordination with state Civil Protection.	1
11	Possible tire piles	Naco	Sonora	No Estimate	31.32627222	-109.9097889	NA	Consider site visit to assess site conditions in coordination with state Civil Protection.	1
12	Landfill/ possible tires	Agua Prieta	Sonora	No Estimate	31.29909444	-109.579225	NA	Consider site visit to assess site conditions in coordination with state Civil Protection.	1
13	Junkyard/ possible tires	Agua Prieta	Sonora	No Estimate	31.30273333	-109.5563333	NA	Site visit January 2003.	1
14	Ciudad Juarez	Ciudad Juarez	Chihuahua	4,500,000	31.556647	-106.486267	Active	Coordinates and site information obtained from Jorge Castillo (2005); information from Adriana Oropeza (2006) says 800,000 tires cleaned-up.	2
15	Relleno Sanitario landfill vomplex	Piedras Negras	Coahuila de Zaragoza	220,000-250,000	29.320858	-101.060549	Active	The first phase of the clean-up has begun (70,000 in 2006). By the end of October 2006 about 10,140 tires had already been moved.	9
16	Relleno Sanitario landfill complex	Ciudad Acuña	Coahuila de Zaragoza	25,000	28.75692	-100.58065	Active	The first phase of the clean-up began in mid-November 2006.	3
17	Centinela waste tire collection site	Mexicali	Baja California Norte	0	32.611944	-115.689528	Cleaned up	1,126,000 tires have been removed. The site will be used as an industrial park.	4
18	Innor waste tire collection site	Mexicali	Baja California Norte	0	32.597667	-115.668222	Cleaned up	All types of tires were accepted from the entire State of Baja California. At present, the site is abandoned. There is no fence surrounding the area (Innor Final Report 2004). Site cleaned up, formerly 420,000 tires (Jorge Castillo 2006, Adriana Oropeza 2006).	5
19	Llanset waste tire collection site	Mexicali	Baja California Norte	400,000	32.590361	-115.666722	Active	There are an estimated 400,000 tires at this site.	9
20	Matamoros	Matamoros	Tamaulipas	600,000	NA	NA	Active	No coordinates or address.	10
21	Tiradero Las Calabazas	Reynosa	Tamaulipas	34,000-50,000	NA	NA	Active	Tire estimate is based on a total estimate of 200,000-300,000 tires in Reynosa, evenly divided among 6 sites; closed but not secured dumping continues.	8
22	Tiradero Corrales	Reynosa	Tamaulipas	34,000-50,000	NA	NA	Active	Tire estimate is based on a total estimate of 200,000-300,000 tires in Reynosa, evenly divided among 6 sites. Operated as a tire storage site for 5 years and during this time three emergencies (fires) have occurred.	8
23	Tiradero Anacuas	Reynosa	Tamaulipas	34,000-50,000	NA	NA	Active	Tire estimate is based on a total estimate of 200,000-300,000 tires in Reynosa, evenly divided among 6 sites. Several small areas continue to operate in this sector.	8
24	Tiradero Cumbres	Reynosa	Tamaulipas	34,000-50,000	NA	NA	Active	Tire estimate is based on a total estimate of 200,000-300,000 tires in Reynosa, evenly divided among 6 sites; closed in August of 2005. Will become future site of a solid waste transfer center.	8
25	Relleno Sanitario "Las Colmenas"	Reynosa	Tamaulipas	34,000-50,000	NA	NA	Active	Tire estimate is based on a total estimate of 200,000-300,000 tires in Reynosa, evenly divided among 6 sites; operating since 1999. Currently is a disposal site for industrial scrap by large generators.	8
26	Relleno Sanitario "Alto Bonito"	Reynosa	Tamaulipas	34,000-50,000	NA	NA	Active	Tire estimate is based on a total estimate of 200,000-300,000 tires in Reynosa, evenly divided among 6 sites; operating since December of 2004. 5000 are sent to kilns in Nuevo Leon.	8
27	San Luis Rio Colorado	San Luis Rio Colorado	Sonora	140,000	NA	NA	Active	The initial clean-up phase has begun. The mechanism for Union de Llanteros to send their used tires to a cement kiln in Ensenada has also been re-established. This site is an old dump site.	9
28	Nogales	Nogales	Sonora	200,000	NA	NA	Active	Tire pile quantity was the only available information.	7
29	Agua Prieta	Agua Prieta	Sonora	0	NA	NA	Cleaned up	About 40,000 cleaned up in 2004.	9
30	Nuevo Laredo	Nuevo Laredo	Tamaulipas	0	NA	NA	Cleaned up	Fire in July 2005; tires gone. The municipality had established for more than 8 years a municipal scrap tire management plan. Initially, they sent tires to a cement facility in Monterrey. Now it is curently being shredded in the landfill. They are also helping "Miguel Aleman" Municipality to dispose of their used tires. Nuevo Laredo is paying the disposal costs and Miguel Aleman is paying the transportation costs.	7

Notes:

NA = Not available

a The primary objective of the project was to compile existing data to create an inventory for the Mexican side of the U.S.-Mexico border.

b Sources are described below

1. U.S. EPA Region 9. October 2003. "U.S./Mexico Border Tire Pile Study for Fire Prevention and Mitigation, Revised Draft."

2. Conversation with Jorge Castillo, Texas Commission on Environmental Quality (TCEQ), and Adriana Oropeza, SEMARNAT. Received file "jz\_landfill.jpg," dated October 2005, from Mr. Castillo.

3. Conversation with Jorge Castillo, TCEQ, and Adriana Oropeza, SEMARNAT.

4. U.S. EPA Region 9. October 2004. "Preventing Waste Tire Pile Fires on the U.S./Mexico Border, Centinela Final Report," and Conversation with Adriana Oropeza, SEMARNA1

5. U.S. EPA Region 9. October 2004. "Preventing Waste Tire Pile Fires on the U.S./Mexico Border, Innor Final Report," and Conversation with Jorge Castillo, TCEQ and Adriana Oropeza. SEMARNAT

6. U.S. EPA Region 9. October 2004. "Preventing Waste Tire Pile Fires on the U.S./Mexico Border, Llanset Final Report," and Conversation with Adriana Oropeza, SEMARNAT

7. Conversation with Jorge Castillo, TCEQ and Adriana Oropeza, SEMARNAT. Received file "Tire Pile Inventory.xls," dated November 2005, from Abigail Ryder, U.S. EPA

8. Conversation with Jorge Castillo, TCEQ and Adriana Oropeza, SEMARNAT. Received file "TxMx Inventory\_Preliminary.xls," dated October 2005, from Mr. Castillc

9. Conversation with Adriana Oropeza, SEMARNAT.

10. e-Mail Message dated November 6, 2006 from Adriana Oropeza, SEMARNAT, Regarding Tire Quantity Estimates Based on Matamoros Municipality Presentation in August 2006.

**APPENDIX C**

**U.S.–MEXICO BORDER  
SCRAP TIRE PILE SITE INVENTORY**

(Available on Enclosed CD)



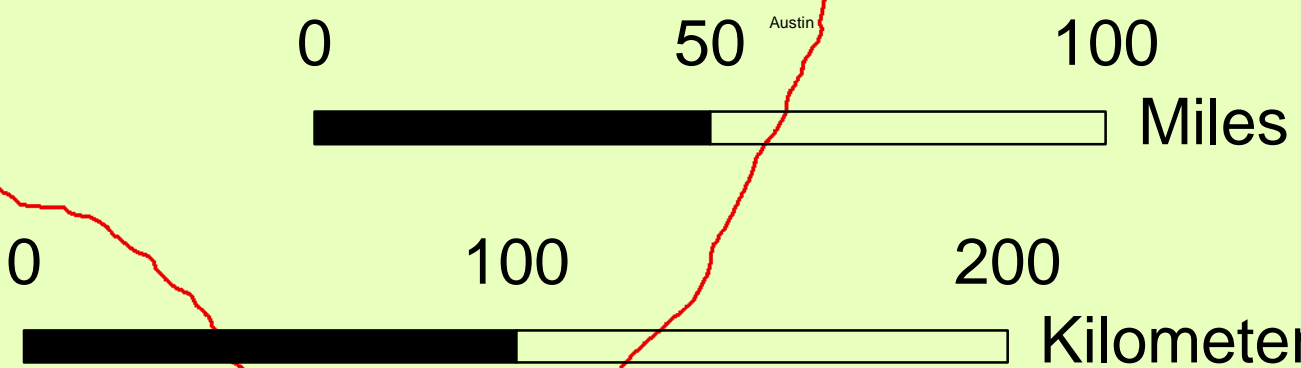
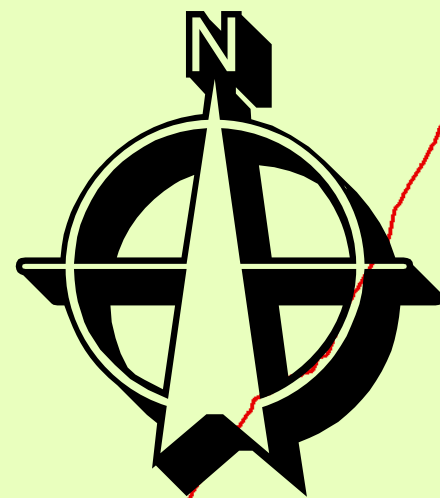
# U.S. - MEXICO BORDER SCRAP TIRE PILE SITE INVENTORY

## LEGEND

### U.S. - Mexico Border Scrap Tire Sites

- ▲ Active
- ▲ No Estimated Number of Tires
- ▲ Site Cleaned up
- Study Area
- Urban Area
- Mexico

- U.S.
- Federal Highway
- State Highway
- Major Rivers
- Water Body



## U.S. - MEXICO BORDER MEXICO SCRAP TIRE PILE SITE INVENTORY

Site ID	Name/Description	Location	State	Number of Tires	Latitude	Longitude	Status	Comments/Recommendations
1	Probable waste disposal area	Tijuana	Baja California Norte	0	32.50454444	-116.8681889	Cleaned up	2 sub-sites associated with this site.
2	Six temporary waste disposal centers	Tijuana	Baja California Norte	0	NA	NA	Cleaned up	Consider site visit to determine whether any tires remain; monitor tires that occur over time.
3	La Gloria	Tijuana	Baja California Norte	0	NA	NA	Cleaned up	Consider site visit to assess site conditions in coordination with state Civil Protection.
4	Probable tire piles	San Luis Rio Colorado	Sonora	No Estimate	32.4103	-114.8381111	NA	Site information not available.
5	Possible maintenance facility/ possible tires	San Luis Rio Colorado	Sonora	No Estimate	32.46876667	-114.8138556	NA	Site information not available.
6	Probable junkyard/ salvage/ possible tires	San Luis Rio Colorado	Sonora	No Estimate	32.42779444	-114.807893	NA	Site information not available.
7	Probable burned tire pile	San Luis Rio Colorado	Sonora	No Estimate	32.4314	-114.7766222	NA	Site information not available.
8	Burning probable tire pile	San Luis Rio Colorado	Sonora	No Estimate	32.41274444	-114.7815444	NA	Site information not available.
9	Possible truck maintenance site/ possible tires	Sonota	Sonora	No Estimate	31.87889167	-112.8161694	NA	Consider site visit to assess site conditions in coordination with state Civil Protection.
10	Probable dump/ possible tires	Naco	Sonora	No Estimate	31.30521944	-109.9417889	NA	Consider site visit to assess site conditions in coordination with state Civil Protection.
11	Possible tire piles	Naco	Sonora	No Estimate	31.32527222	-109.9097889	NA	Consider site visit to assess site conditions in coordination with state Civil Protection.
12	Landfill/ possible tires	Agua Prieta	Sonora	No Estimate	31.29909444	-109.579225	NA	Consider site visit to assess site conditions in coordination with state Civil Protection.
13	Junkyard/ possible tires	Agua Prieta	Sonora	No Estimate	31.30273333	-109.5563333	NA	Site visit January 2003.
14	Ciudad Juarez	Ciudad Juarez	Chihuahua	4,500,000	31.556647	-106.486267	Active	Coordinates and site information obtained from Jorge Castillo (2005); information from Adriana Orpeza (2006) says 800,000 tires cleaned-up.
15	Relleño Sanitario landfill vromplex	Piedras Negras	Coahuila de Zaragoza	220,000-250,000	29.320858	-101.060549	Active	The first phase of the clean-up has begun (70,000 in 2006). By the end of October 2006 about 10,140 tires had already been moved.
16	Relleño Sanitario landfill complex	Ciudad Acuña	Coahuila de Zaragoza	25,000	28.75592	-100.58065	Active	The first phase of the clean-up began in mid-November 2006.
17	Centinelita waste tire collection site	Mexicali	Baja California Norte	0	32.611944	-115.695928	Cleaned up	1,126,000 tires have been removed. The site will be used as an industrial park.
18	Innor waste tire collection site	Mexicali	Baja California Norte	0	32.597667	-115.668222	Cleaned up	All types of tires were accepted from the entire State of Baja California. At present, the site is abandoned. There is no fence surrounding the area (Innor Final Report 2004). Site cleaned up, formerly 420,000 tires (Jorge Castillo 2005, Adriana Orpeza 2006).
19	Llanoset waste tire collection site	Mexicali	Baja California Norte	400,000	32.590361	-115.666722	Active	There are an estimated 400,000 tires at this site.
20	Matamoros	Matamoros	Tamaulipas	600,000	NA	NA	Active	No coordinates or address.
21	Tiradero Las Calabazas	Reynosa	Tamaulipas	34,000-50,000	NA	NA	Active	Tire estimate is based on a total estimate of 200,000-300,000 tires in Reynosa, evenly divided among 6 sites; closed but not secured dumping continues.
22	Tiradero Corrales	Reynosa	Tamaulipas	34,000-50,000	NA	NA	Active	Tire estimate is based on a total estimate of 200,000-300,000 tires in Reynosa, evenly divided among 6 sites. Operated as a tire storage site for 5 years and during this time three emergencies (fires) have occurred.
23	Tiradero Anacuas	Reynosa	Tamaulipas	34,000-50,000	NA	NA	Active	Tire estimate is based on a total estimate of 200,000-300,000 tires in Reynosa, evenly divided among 6 sites. Several small areas continue to operate in this sector.
24	Tiradero Cumbres	Reynosa	Tamaulipas	34,000-50,000	NA	NA	Active	Tire estimate is based on a total estimate of 200,000-300,000 tires in Reynosa, evenly divided among 6 sites; closed in August of 2005. Will become future site of a solid waste transfer center.
25	Relleño Sanitario "Las Colmenas"	Reynosa	Tamaulipas	34,000-50,000	NA	NA	Active	Tire estimate is based on a total estimate of 200,000-300,000 tires in Reynosa, evenly divided among 6 sites, operating since 1999. Currently is a disposal site for industrial scrap by large generators.
26	Relleño Sanitario "Alto Bonito"	Reynosa	Tamaulipas	34,000-50,000	NA	NA	Active	Tire estimate is based on a total estimate of 200,000-300,000 tires in Reynosa, evenly divided among 6 sites; operating since December of 2004. 5000 are sent to kilns in Nuevo Leon.
27	San Luis Rio Colorado	San Luis Rio Colorado	Sonora	140,000	NA	NA	Active	The initial clean-up phase has begun. The mechanism for Union de Llaneros to send their used tires to a cement kiln in Ensenada has also been re-established. This site is an old dump site.
28	Nogales	Nogales	Sonora	200,000	NA	NA	Active	Tire pile quantity was the only available information.
29	Agua Prieta	Agua Prieta	Sonora	0	NA	NA	Cleaned up	About 40,000 cleaned up in 2004.
30	Nuevo Laredo	Nuevo Laredo	Tamaulipas	0	NA	NA	Cleaned up	Fire in July 2005; tires gone. The municipality had established for more than 8 years a municipal scrap tire management plan. Initially, they sent tires to a cement facility in Monterrey. Now it is currently being shredded in the landfill. They are also helping "Miguel Aleman" Municipality to dispose of their used tires. Nuevo Laredo is paying the disposal costs and Miguel Aleman is paying the transportation costs.

Notes:  
NA = Not available